

Radiation Hard Multi-Layer Optical Coatings, Phase II

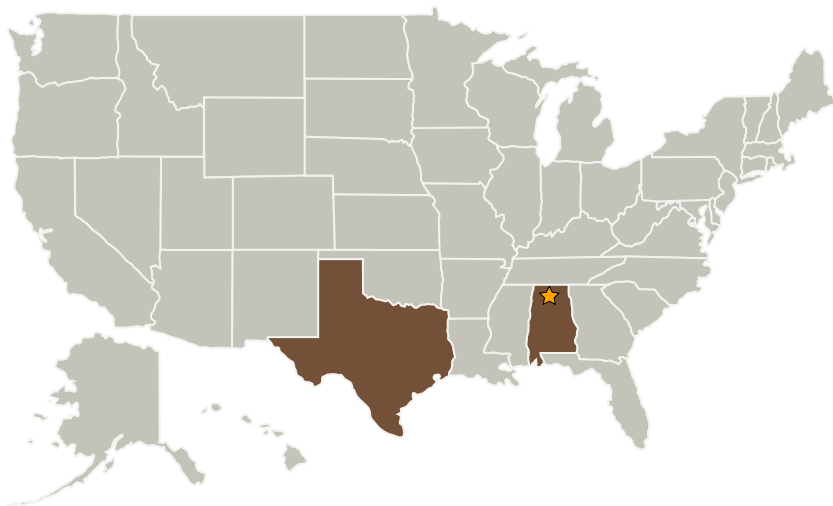
Completed Technology Project (2008 - 2010)



Project Introduction

Next-generation space telescopes require advanced optical coatings to provide low-loss polarization-preserving transmission/reflection of light in a variety of spectral ranges. These coatings also need to protect optical components as well as the coatings themselves, from damage in a space environment. For example, one of the critical technologies identified in the NASA capabilities roadmap for advanced telescopes and observatories is advanced optical coating technology for cryogenic mirrors that is uniform and polarization preserving in the visible through far IR regions as well as improved dichroic, spectral and combiner coatings. To address this need Nanohmics is investigating use of sputter deposited amorphous nitrides and oxides as high quality, long lived radiation resistant coatings for production of anti-reflection and bandpass coatings on optical substrates including metals, PMMA, beryllium and other materials. Discussions with the contracting officer's technical representative indicated that the main Fresnel lens in the EUSO (Extreme Universe Space Observatory) may be a good candidate for amorphous nitride anti-reflective coatings. The Phase II effort will focus on coatings for PMMA based optics; however, this coating technology can be applied to many other optical systems.

Primary U.S. Work Locations and Key Partners



Radiation Hard Multi-Layer
Optical Coatings, Phase II

Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Organizational Responsibility	1
Project Transitions	2
Project Management	2
Technology Areas	2

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission
Directorate (STMD)

Lead Center / Facility:

Marshall Space Flight Center
(MSFC)

Responsible Program:

Small Business Innovation
Research/Small Business Tech
Transfer

Radiation Hard Multi-Layer Optical Coatings, Phase II

Completed Technology Project (2008 - 2010)



Organizations Performing Work	Role	Type	Location
★ Marshall Space Flight Center (MSFC)	Lead Organization	NASA Center	Huntsville, Alabama
Nanohmics, Inc.	Supporting Organization	Industry	Austin, Texas

Primary U.S. Work Locations	
Alabama	Texas

Project Transitions

**December 2008:** Project Start**December 2010:** Closed out

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
 - └ TX12.1 Materials
 - └ TX12.1.5 Coatings